“Feel the Clinical Freedom on Science and Safety”

Founded in 1999, Purgo Biologics strives to become one of the leading global companies in oral health care with its focus on safe biomaterials for soft tissue and bone regeneration. Based on the specialized experiences accumulated by our outstanding research personnel, Purgo Research and Development Center based in Seoul is thriving to become the best in the world, specifically in the expertise of oral biomaterials for soft tissue and bone regeneration. All members in Research and Development Center are pursuing the optimized technical developments with various clinical studies, cooperative research with the governments, clinicians and educational institutions.

The solutions manufactured by Purgo are gaining fame throughout the world and Purgo’s solutions are widely accepted by global dentists from more than 30 countries.

Our production site is complying with the most international quality standards and regularly inspected by international agencies. Each production stage of our biologics solutions are controlled from the selection of the raw material to the final product.
THE Graft™ is a natural, porous bone mineral matrix. It is produced by removal of all organic components from porcine bone. Due to its natural structure the anorganic bone mineral of THE Graft™ likens physical and chemical aspects of mineralized matrix of human bone. When packed into a bone defect, THE Graft™ gradually resorbs and is replaced with bone during the healing process. It is available in cancellous granules packaged in vial. THE Graft™ is sterilized using gamma irradiation.

Unique proprietary manufacturing process removes very effectively potential immunogenic organic elements keeping the natural structure of the matrix.

THE Graft™ quality and safety have been scientifically demonstrated with in-vitro, in-vivo studies, large case study reports and international randomized clinical research. Systematic review and meta-analysis are conducted on THE Graft™ worldwide. [1-2]

THE Graft™ has established its fame throughout the world, both scientifically and clinically, becoming the popular bone regeneration material.

<table>
<thead>
<tr>
<th><strong>Indications</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bone replacement materials</td>
</tr>
<tr>
<td>Extraction socket/Defective socket with intact socket/Defective socket with intact socket</td>
</tr>
<tr>
<td>Mini bone augmentation</td>
</tr>
<tr>
<td>Major bone augmentation</td>
</tr>
<tr>
<td>Simultaneous bone extraction</td>
</tr>
<tr>
<td>Perimplantitis</td>
</tr>
</tbody>
</table>

**Specifications**

<table>
<thead>
<tr>
<th>Description</th>
<th>Item*</th>
<th>Size / Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>THE Graft™ (S) Granule 0.25-1.00 mm</td>
<td>BG-A05</td>
<td>0.25 g</td>
</tr>
<tr>
<td>THE Graft™ (S) Granule 0.25-1.00 mm</td>
<td>TG-AS05</td>
<td>0.25 g</td>
</tr>
<tr>
<td>THE Graft™ (S) Granule 0.25-1.00 mm</td>
<td>BG-A10</td>
<td>0.50 g</td>
</tr>
<tr>
<td>THE Graft™ (S) Granule 0.25-1.00 mm</td>
<td>TG-AS10</td>
<td>0.50 g</td>
</tr>
<tr>
<td>THE Graft™ (S) Granule 1.00-2.00 mm</td>
<td>BG-A15</td>
<td>1.00 g</td>
</tr>
<tr>
<td>THE Graft™ (S) Granule 1.00-2.00 mm</td>
<td>TG-AS15</td>
<td>1.00 g</td>
</tr>
<tr>
<td>THE Graft™ (S) Granule 1.00-2.00 mm</td>
<td>BG-A20</td>
<td>1.00 g</td>
</tr>
<tr>
<td>THE Graft™ (S) Granule 1.00-2.00 mm</td>
<td>TG-AS20</td>
<td>1.00 g</td>
</tr>
</tbody>
</table>

* S : small  /  L : large
** Syringe packaging is CE pending

** Syringe packaging is CE pending
Is THE Graft™ safe material?

Proprietary virus inactivation process technology. Thanks to highly efficient manufacturing process, THE Graft™ is free from any organic components that might be potential causes of infection or immune reaction. This unique process preserves most of the physical properties of the native porcine osseous structure of THE Graft™. A large surface area is a key requirement for graft materials, and not only results in a larger surface region available for osteoblast cells attachment but also facilitates the exchange of nutrients and waste products, it allows greater amounts of blood, proteins, and growth factors to be absorbed onto the scaffold.

THE Graft™ has a high purity. The analysis result minimal residual protein, soft tissue, and organic bone matrix, proves that THE Graft™ is deproteinized enough for safe use.

Other than THE Graft™, such lower values for organic residues are only found with bone graft material treated at high temperatures which may cause the detriment of the natural bone structure.

THE Graft™ demonstrated a protein content lower than that of the natural bovine bone graft material.

Is porcine bone safer than bovine?

Bovine cancellous bone is Not Free of Zoonoses, such as BSE-Bovine Spongiform Encephalopathy. Porcine bone has a relatively low risk of zoonoses.

THE Graft™ demonstrated a protein content lower than that of the natural bovine bone graft material.

Less residual organic content for High purity

High purity means low organic matters

High Surface Energy

High Hydrophilicity

Porosity is an important factor in determining tissue-implant material integration. High porosity leads to a quicker absorption of liquids and cells spreading. THE Graft™ provides the optimized bone architecture for adhesion and tissue regeneration.

Human Bone

Comparison of bone structure and composition from human and animal origins

THE Graft™

Getting closer to human bone

The Graft™ is structurally similar to human bone. It has high possible level of porosity combined with a natural interconnectivity.

Safe & Biocompatible

The combination of porcine origin with the high level of porosity enables predictable bone growth without risking an immunogenic reaction. The high biocompatibility of THE Graft™ has been confirmed by an in-vitro cell study. THE Graft™ therefore encourages cell adhesion to the same extent as the established natural DBBM and offers optimal conditions for vital cell growth.

THE Graft™ Purity

These results show that organic substances, including collagen and other organic compounds, were successfully removed from THE Graft™, which is thus not affected by issues associated with organic content.

THE Graft™ Biocompatibility

Less residual organic content for High purity

High purity means low organic matters

High Surface Energy

High Hydrophilicity

Porosity is an important factor in determining tissue-implant material integration. High porosity leads to a quicker absorption of liquids and cells spreading. THE Graft™ provides the optimized bone architecture for adhesion and tissue regeneration.
High porosity and early remodelling improve clinical performance.

The High porosity of THE Graft™ means a quicker absorption of liquids (e.g., blood) in comparison with DBBM. This not only facilitates the application of the material but also leads to a quicker post-implantation incorporation.

High level of porosity was demonstrated with particle pore structure test, particle size distribution test and total porosity tests.

THE Graft™ Structure:

1. Macropores (diameter > 100 µm), are necessary to form blood vessels and induce both bone growth and reorganization around the graft material.
2. Micropores (diameter <10 µm), are required for the penetration of body fluids, ion transportation, the attachment of osteoblasts, and the precipitation of newly formed HA.
3. Nanopores, composed of sub-100-nm grains with a large amount of nanoscale pores present between the grains contrast.

Global porosity analysis:

- Human trabecular bone (~79.3%)
- THE Graft™ ~ 78.4%

Specific surface area

Porcine Bovine

0.5 1.0 1.5 2.0
Mass (g)

0 50 100 150 200 250 300
Time (sec)

69.9 ± 23.6 65.4 ± 16.7

Porcine Bovine

Specific surface area (m²/g)

THE Graft™ consists of a unique inter-connection pore system that ensures an efficient fluid intake and permits the migration of cells. This pore system and high surface energy enhance the osteoconduction process.

The SSA of THE Graft™ was significantly larger than the values measured for the bovine bone. Considering that both THE Graft™ and the bovine bone had a different surface morphology and pore size distribution with a substantial amount of nanoscale pores, we believe that this difference in the SSA was closely related to the nano/microscale structure of the bone graft materials.

The high wettability of THE Graft™ suggests that it may have advantages in terms of protein adsorption and the resulting cell adhesion and proliferation processes after implantation. The content of the organic component of THE Graft™ was somewhat lower than compared existing xenografts.
OpenTex™ Non-Resorbable PTFE Membrane is a pure medical-grade polytetrafluoroethylene (PTFE) sheet with inert biological features and predictable barrier effect. Due to the smooth surface and small pore size, OpenTex™ PTFE Membrane resists the incorporation of bacteria into its structure and eases the removal of the membrane.

Non-resorbable membrane is sustainable for surgical procedure with no primary closure. OpenTex™ Membrane is ideal for space-making feature providing enough space for host cells to adhere to grafting materials. OpenTex™ is supplied sterile for single use only and available in various sizes.

The Evolution of PTFE Membrane

OpenTex™ is a non-resorbable polytetrafluoroethylene (PTFE) sheet with inert biological features and predictable barrier effect. Due to the smooth surface and small pore size, OpenTex™ PTFE Membrane resists the incorporation of bacteria into its structure and eases the removal of the membrane.

Non-resorbable membrane is sustainable for surgical procedure with no primary closure. OpenTex™ Membrane is ideal for space-making feature providing enough space for host cells to adhere to grafting materials. OpenTex™ is supplied sterile for single use only and available in various sizes.

The Evolution of PTFE Membrane

<table>
<thead>
<tr>
<th>1980s</th>
<th>1994</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Generation</td>
<td>2nd Generation</td>
<td>2nd Generation</td>
</tr>
<tr>
<td>PTFE membrane</td>
<td>d-PTFE membrane</td>
<td>d-PTFE membrane</td>
</tr>
</tbody>
</table>

- 1st Generation is considered the gold standard in barrier membranes.
- d-PTFE membrane is considered a novel barrier membrane.
- It is especially suitable for bone regeneration and soft tissue management of an extraction socket after immediate implant placement.
- It is particularly suitable for bone regeneration and soft tissue management of an extraction socket after immediate implant placement.

Primary Closure

- GBR (Guided Bone Regeneration)
  - Simultaneous use of GBR membrane and implants.
  - Augmentation around implant placed in immediate extraction sites or delayed extraction sockets.
  - Filling of bone defects after root resection, removal of cysts, and removal of retained teeth.

Non-Primary Closure

- GTR (Guided Tissue Regeneration)
  - Primary Closure
  - Non-Primary Closure

Specifications

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>OpenTex_01</td>
<td>24 mm x 30 mm</td>
</tr>
<tr>
<td>OpenTex_02</td>
<td>17 mm x 25 mm</td>
</tr>
</tbody>
</table>
Impervious to Bacteria

Most of Oral Bacteria is larger than 1 μm. OpenTex™ is micro-porous material that has the pore size small enough to prevent bacterial infiltration.

Biocompatible, OpenTex™ facilitates cell adhesion on the surfaces. Test performed shows that the surface of OpenTex™ is not toxic causing cells to adhere well on the surface.

Characteristics of OpenTex™

1. Stability: Non-resorbable PTFE Membrane offers enough healing time to bone regenerative process.
2. Biologically inert: PTFE is soft tissue friendly so it is ideal material as a barrier for bone regenerative process.
3. Withstands to exposure: PTFE Membrane withstands to exposure since it is impervious to bacteria due to their barrier function.
Membrane is composed of 100% polytetrafluoroethylene (PTFE) sheet and grade 1 titanium frame, which are biologically inert and tissue compatible.

OpenTex™-TR Non Resorbable PTFE Membrane with titanium frame is designed to have a suitable surface structure and porosity to prevent integration and passage of bacteria within the interstices of the material, while maintaining space for host cells adhesion to the device.

OpenTex™-TR provides a favorable environment for neovascularization and healing of defects, through repopulating the bone derived cells and protecting the bony defects from migration of the gingival tissue derived cells. Since the adequate space maintenance is critical to this procedure, the membrane is sufficiently stiff to prevent spontaneous collapse, but also flexible enough to easily conform to tissue contours and reduce perforations of overlying soft tissue. [10]

Indications

01. Extraction socket reconstruction
02. Bone regeneration
03. Where primary closure isn’t possible

Primary Closure

Specifications

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>OpenTex_FR_01</td>
<td>17 mm x 25 mm</td>
</tr>
<tr>
<td>OpenTex_FR_02</td>
<td>24 mm x 30 mm</td>
</tr>
<tr>
<td>OpenTex_FR_03</td>
<td>17 mm x 25 mm</td>
</tr>
<tr>
<td>OpenTex_FR_04</td>
<td>14 mm x 24 mm</td>
</tr>
<tr>
<td>OpenTex_FR_05</td>
<td>14 mm x 24 mm</td>
</tr>
<tr>
<td>OpenTex_FR_06</td>
<td>30 mm x 40 mm</td>
</tr>
</tbody>
</table>

OpenTex™-TR is an optimal product that can be trimmed easily and is solid enough for space making since it is reinforced with a titanium frame.

- **Diverse embedded titanium frame**: OpenTex™-TR is designed in various shapes to meet surgeon's demand.
- **Excellent tissue interaction**: Its microporous structure helps the tissue interaction.
- **Easy of use**: OpenTex™-TR can be trimmed easily and also removed easily.

**OpenTex™-TR Main Features**

- Non-Resorbable
- Minimally Invasive
- Optimal rigidity for space maintenance

**OpenTex™-TR Benefits**

1. **Optimal rigidity and strength for space making**: OpenTex™-TR is optimal for trimming easily and it is solid enough for space making since it is reinforced with a titanium frame.

2. **Diverse embedded titanium frame**: OpenTex™-TR is designed in various shapes to meet surgeon's demand.

3. **Excellent tissue interaction**: Its microporous structure helps the tissue interaction.

4. **Easy of use**: OpenTex™-TR can be trimmed easily and also removed easily.

**Characteristics of OpenTex™-TR**

- PTFE sheet
- Grade 1 Titanium
- Membrane can be molded and shaped for tenting and space maintenance.
- The rigidity of the membrane is enhanced to be used for space maintenance.
- Provides additional stability in large, non-space-making osseous defects.
- Provide with little memory of Titanium frame, which enables easy placement of the membrane.
- Ability to withstand exposure.
Biotex™ Non Resorbable PTFE Suture is comprised of a single-arm, non-resorbable monofilament suture with a stainless-steel surgical needle connected to the suture. The suture is uncoated, undyed and sterile for single use only, composed of 100% PTFE.

- **SOFT HANDLING**
- **BIOLOGICALLY INERT**
- **NO TANGLE**
- **EASY KNOTTING**

**Indications**
- Bone grafting procedures
- Periodontal surgery
- Guided tissue regeneration
- Ridge augmentation
- Implant surgery
- Soft tissue grafts

**Specifications**

<table>
<thead>
<tr>
<th>Item No.</th>
<th>USP Size</th>
<th>Length (mm)</th>
<th>Needle Length</th>
<th>Circle Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT3019</td>
<td>3-0</td>
<td>45</td>
<td>19</td>
<td>3/8</td>
</tr>
<tr>
<td>BT3016</td>
<td>3-0</td>
<td>45</td>
<td>16</td>
<td>3/8</td>
</tr>
<tr>
<td>BT4016</td>
<td>4-0</td>
<td>45</td>
<td>16</td>
<td>3/8</td>
</tr>
<tr>
<td>BT4019</td>
<td>4-0</td>
<td>45</td>
<td>19</td>
<td>3/8</td>
</tr>
<tr>
<td>BT5016</td>
<td>5-0</td>
<td>45</td>
<td>16</td>
<td>3/8</td>
</tr>
<tr>
<td>BT4013</td>
<td>4-0</td>
<td>45</td>
<td>13</td>
<td>3/8</td>
</tr>
<tr>
<td>BT5013</td>
<td>5-0</td>
<td>45</td>
<td>13</td>
<td>3/8</td>
</tr>
<tr>
<td>BT04013</td>
<td>4-0</td>
<td>45</td>
<td>13</td>
<td>1/2</td>
</tr>
</tbody>
</table>
Biotex™ Main Features & Benefits

Suture
1. High pliability (PTFE)
   - Tying and bending more at ease with less unintended loosening.
2. No room for little plaque
   - It dispels the possibility of any bacterial infection as well as the plaque formation and any other factors that prevent healing process.

Needle
1. Slim reverse cutting needle tip
   - Precision slim cut triangular needle for small penetration area and smooth suturing.
   - Minimize damage to surrounding soft tissue.
2. Strong Needle
   - 33% higher strengths are required to bend needle in same degree compared to other product.
   - High rigidity of the needle resists to bent stress during suturing.
3. Strong Attachment
   - Advanced technology for strong needle attachment.
   - Smooth and firm connection between needle and thread.
   - Rapid healing process due to the reduced bleeding from needle insertion.

Benefits
- Soft and comfortable for patients
- Soft texture for patient comfort
- Reliable closure period
- Superior handling: provides flexibility in the positioning of a square knot. Easy to tie - Easy to remove
- Nonwicking: Elimination of bacterial wicking usually associated to monofilament
- Maintains tensile strength
- PFOA free

Competitor: Biotex
- Before bending After bending
- Before bending After bending

Competitor: Biotex
- Before bending After bending

Tab
- Allows surgeon to easily grasp and remove the suture needle from its needle holder clip.

"Race Track" shape
- Designed to prevent suture from entangling and allows easy release of the suture.

Other:
- Transparent Cover
  - Protect and give clear visibility of suture and needle.
  - Soft and sturdy cover effectively protect the suture.
- Needle holding clip
  - Designed to hold the needle in place. Also allows for secure and easy release of the suture needle from its package.

Abellan et al, Physical and mechanical evaluation of five suture materials on three knot configurations: An in vitro study, polymers, 2016, 8, 147; doi: 10.3390/POLYM8050147
Adaptable Resorbable Collagen Membrane

BioCover™ is a resorbable collagen membrane consisting porcine tissues which are similar to human collagen phylogenetically. BioCover™ resorbable collagen membrane offers excellent handling, easy adaptation to bone graft materials and less time consumption in surgery.

- **FLEXIBLE & ADAPTABLE**
- **STRONG ENOUGH FOR SUTURE**
- **CROSSLINKED FOR DESIRED BARRIER DURABILITY**

BioCover™ benefits:
- Biocompatible and safe
- Excellent Handling
- Great tissue adhesion
- Cell exclusive
- Strong enough to suture

**Specifications**

<table>
<thead>
<tr>
<th>Item N°</th>
<th>Unit Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG0701EZC1525</td>
<td>15 x 25</td>
</tr>
<tr>
<td>PG0702EZC2030</td>
<td>20 x 30</td>
</tr>
<tr>
<td>PG0703EZC3040</td>
<td>30 x 40</td>
</tr>
</tbody>
</table>

**Indications**

BioCover™ is intended for use in periodontal and dental surgery procedures as a material for placement in the area of periodontal defect, dental implant, bone defect or ridge reconstruction to aid in wound healing post surgery. Considering BioCover™ indications and resorption time, it is recommended to combine the membrane with bone graft to new bone healing by osteoconduction (THE Graft™).